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COMMENTARY

Providing comprehensive cardiac rehabilitation during and after the COVID-19 pandemic

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The COVID-19 pandemic has had and still has an unprecedented impact on our daily lives and healthcare systems. Health professionals were forced to rethink the delivery of essential care in times of worldwide health crisis due to the shutdown of all non-urgent medical services. Many cardiac rehabilitation (CR) centres were closed in order to increase the surge capacity during the first wave of the COVID-19 pandemic and to prevent COVID-19 infections of high-risk cardiovascular patients. However, it is well-established that a delayed start of CR is associated with poor uptake, attendance, and completion rates of CR programs.[1,2] This led to a structured call-for-action by the European Association of Preventive Cardiology (EAPC) to use cardiac telerehabilitation as a way to continue the delivery of the core components of cardiac rehabilitation.[3,4]

During the initial phase of the pandemic, several centres started with remote cardiac rehabilitation. The initial capacity was low and many patients were left out,[5] however, many centres were able to deliver adequate rehabilitation by means of telerehabilitation, each program organized in its own way. Due to these successes, it is now clear that telerehabilitation was not only an alternative during the shutdown of the CR centres but it will continue to play a vital role in providing care in current and future times of reduced capacity in many CR centres.

Nowadays, CR centres in Europe are open again but they face new difficulties due to the still threatening COVID-19 pandemic. Extraordinary measures have to be taken in the CR centres, such as social distancing and redeployment of CR staff which leads to lower capacity. Many patients fear to get infected by coming to the hospital, making them reluctant to participate in a CR program. This has motivated ESC President Professor Barbara Casadei to emphasize the importance of addressing these patient's fears. Lastly, a new cardiac patient phenotype has emerged, namely the patient with cardiovascular complications due to COVID-19 infection.

All these factors have made the care for cardiovascular patients much more complex than before.

The lack of evidence-based guidelines makes the delivery of CR in times of the COVID-19 pandemic challenging. The pandemic led to a burst of scientific publications, unfortunately often with less convincing scientific value. The need for guidance without a fundament of well-designed randomized trials stimulated the EAPC to take a new approach using a modified Delphi process. The Delphi process allows to fill the gap of evidence on how to provide CR in times of the COVID-19 pandemic by collecting and combining expert opinion. The paper by Ambrosetti *et al.*[6] invited a total of 28 CR experts from 12 countries to participate in a modified Delphi process which consisted of three questionnaires and 150 statements.

The experts reached a consensus on 39% of the statements, mainly in the field of referral, core components, and structure of CR activities.[6] All panellist agreed that providing CR is crucial independently of an earlier COVID-19 infection. But regardless of criteria for referral, CR should take place only in documented COVID-19 free patients.[6] The core components of CR should remain the same as before with the exception of providing specific education on COVID-19. Furthermore, initial patient assessment should include assessing frailty and cardiopulmonary exercise testing.[6] Following the call-for-action by the EAPC for cardiac telerehabilitation, there was a strong consensus on encouraging remote activities that might integrate in or fully replace routine operation of residential and ambulatory CR facilities.

Strikingly, consensus was significantly higher among experts from countries with high incidence. This could suggest that there is a need for general European recommendations that could be adapted to the local context and incidence rates. Sharing the experiences from different countries and regions should be stimulated because it can accelerate and improve the implementation of high-quality CR in times of and after the pandemic.

The COVID-19 pandemic will have a significant and long-lasting impact on CR in Europe. There will be more focus on initial patient assessment and providing safe environments to exercise. Furthermore, new cardiac phenotypes could be included in CR such as COVID-19 myocarditis or other sequelae of COVID-19. The biggest impact will be on the delivery of CR. This crisis has opened the eyes of many CR centres and has shown that remote delivery of CR is feasible and could be an effective approach to increase the capacity. It is clear that cardiac telerehabilitation is not only a solution during lockdowns but could also be an option to reach patient populations with low participation rates such as

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women and people still at work.[7] Furthermore, telerehabilitation could be a solution in remote areas and low-income regions where there are fewer CR centres.

The results of this Delphi process could help to steer the future directions of CR, not only in the current COVID-19 era but also far beyond.

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